

Rapid Response Plan Following Detection of Dreissenid Mussels in Hawk Springs Reservoir, Wyoming

Laramie Regional Fisheries Management Crew, Wyoming Game and Fish Department, 1212 South Adams Street, Laramie, WY 82070

SUMMARY

Aquatic invasive species (AIS) are introduced, non-native organisms that cause significant harm to ecosystems, which can impact municipal water supplies, recreation, agriculture, aquaculture, and other commercial activities. While there are multiple AIS present in Wyoming, the most significant threat is zebra and quagga (dreissenid) mussels based on their proximity and demonstrated impacts in neighboring states. This Rapid Response Plan provides a guide for how to minimize and contain a potential dreissenid mussel infestation at Hawk Springs Reservoir.

Hawk Springs Reservoir is located on Horse Creek, 10 miles southeast of Hawk Springs and 10 miles north of La Grange, Wyoming. The reservoir receives its water from Horse Creek and natural springs. It is approximately two miles long and one mile wide and covers 1,280 surface acres with a total water capacity of 14,900 acre-feet. Hawk Springs Reservoir is a popular destination for crappie and walleye anglers. While the reservoir and much of the surrounding lands are owned by the Horse Creek Conservation District, the site was named a state recreation area in 1987 and is administered by the Division of State Parks, Historic Sites, and Trails within the Wyoming State Parks and Cultural Resources Department. Based on 2018-2019 AIS inspections, Hawk Springs Reservoir boaters were primarily from Wyoming (74%), Colorado (16%), or Nebraska (8%). Boat angler use peaks in May-June, then transitions into more recreational boating in July-August, followed by mostly boat angler use in September and October. There is one permanent public concrete boat ramp and a few private primitive boat ramps, but shore launching from private and public land is possible.

If a sample from Hawk Springs Reservoir is confirmed as dreissenid mussels, the reservoir will be considered Short-term Suspect with a goal to minimize the risk of spreading mussels to other waters while awaiting follow-up sampling results which should be available within six weeks. Initially, a temporary inspection and decontamination station will be set up in the parking lot near the public boat ramp. A seasonal closure will be implemented from November 1 through March 1 and shore launching by motorized watercraft will be prohibited. Launching of motorized watercraft from private launch sites and shore launching of non-motorized watercraft would be permitted, but all watercraft would require an exit inspection prior to leaving the reservoir. Staffing needs will be highest from May 1 to August 31 when the AIS check station will be open 14 hours a day (6 AM-8 PM), seven days a week. The AIS check station will be staffed with four inspectors Thursday-Saturday and three inspectors on Sunday-Wednesday. Based on a 40-hour work week, at least five inspectors will be needed to maintain this staffing level during the Short-term Suspect Status period.

The long-term containment plan will be similar to our initial response (i.e., similar staffing and check station hours), but will require investment in permanent facilities for

inspections and decontaminations. In addition, a local boater program will be implemented. Initial (first year) implementation cost for long-term containment would be \$265,000 and \$125,000 annually thereafter. If the reservoir becomes infested, the initial (first year) implementation cost for containment would be \$291,000 and \$138,000 annually thereafter.

INTRODUCTION

Zebra (*Dreissena polymorpha*) and quagga (*Dreissena bugensis*) mussels are aquatic invasive species (AIS) that have far-reaching negative impacts on natural resources, water infrastructure, recreation, and can be attributed to significant economic loss. Zebra mussels are native to the Black and Caspian seas and were first discovered in the Great Lakes in 1988. Quagga mussels are native to the Dnieper River Drainage in Ukraine and were first found in the Great Lakes in 1989. Since their initial introductions, these species have spread across most of the United States, and have been detected in Wyoming's neighboring states of Nebraska, South Dakota, Montana, Colorado, and Utah. The close proximity of zebra and quagga mussels to Wyoming elevates the threat of introduction and increases the need for plans to contain them if detected.

Currently, Wyoming's AIS program is focused on outreach, watercraft inspection and monitoring, with the overall goal of keeping invasive species such as zebra and quagga mussels out of the state. Wyoming law requires inspection of all watercraft entering the state and the Wyoming Game and Fish Department (WGFD) currently maintains 14 inspection stations (primarily at Department of Transportation Ports of Entry) that intercept incoming watercraft and inspect them for the presence of AIS. The WGFD AIS program also conducts inspections at various waters by roving personnel and at regional offices. Annual monitoring for a variety of AIS, including zebra and quagga mussels, is conducted on priority waters throughout Wyoming and an outreach program is in place to educate the public about the threats of AIS and what they can do to prevent their spread.

If zebra or quagga mussels are detected in a Wyoming water, immediate action will be necessary to prevent their spread to other waters. This rapid response plan is a water-specific plan that outlines the steps needed to quickly mobilize personnel and equipment to provide exit inspections and, if necessary, decontaminations of all boats leaving the affected water. This plan will be initiated when zebra or quagga mussel veligers (larvae) or adults are detected in a sample from Hawk Springs Reservoir and are verified by independent experts and genetic analysis. At that point, the lake will enter Short-term Suspect Status. This coincides with the period of time necessary to conduct additional sampling and testing necessary to verify whether zebra or quagga mussels are present (up to six weeks). If follow-up sampling does not detect zebra or quagga mussels, the water will enter Long-term Suspect Status and monthly monitoring will be initiated. If zebra or quagga mussels are not detected for three years, the water will once again be considered negative. Conversely, if two sampling events within a 12-month period detect zebra or quagga mussels, the water will enter Positive Status and will not be considered negative again unless mussels are not detected in monthly monitoring for five years. Finally, a water will enter Infested Status when evidence shows a recruiting and reproducing population of zebra or quagga mussels is established. At this point, eradication of mussels is highly unlikely and containment efforts will be necessary for the foreseeable future.

This plan provides guidance for the initial response to detection of dreissenid mussels at each of these four status levels and is intended to be implemented quickly and act as the guiding

document for initial decision making following detection. It is not intended as a long-term containment plan, but will outline the action necessary to provide short-term containment while a long-term containment and monitoring plan is developed.

CONFIRMATION OF DREISSENIID MUSSELS

Sampling of Wyoming waters is conducted annually in accordance with the “Wyoming Game and Fish Department Aquatic Invasive Species Sampling and Monitoring Manual” (WGFD 2019). High priority waters are sampled twice per season (June or July, and September or October), and lower priority waters are sampled once per season in September or October. To determine whether Wyoming waters contain evidence of AIS, specimens of adult or juvenile crayfish, snails, mollusks, plants, etc. are collected during routine sampling and any specimen suspected of being AIS must be positively identified by at least two independent experts. Only samples collected by the WGFD may be used to change the classification of a water. Samples collected by a third party will be used as a notification of a possible detection which must be confirmed by a WGFD sample.

To meet the minimum criteria for detection of dreissenid mussels, an adult or juvenile specimen must be verified by two independent experts and confirmed by DNA, or a veliger (larval form) must be identified and verified using cross-polarized light microscopy by two independent experts and confirmed by DNA analysis (PCR and gene sequencing).

Based on sampling results, waters are given certain classifications related to their dreissenid mussel status:

A water body that has not been sampled for aquatic invasive species is classified as *Unknown/Not Tested*. A water body at which sampling is ongoing and nothing has been detected (or nothing has been detected within the time frames for de-listing) is classified as *Negative*. Currently, all waters in Wyoming are classified as either *Unknown/Not Tested*, or *Negative*.

A water body classified as *Inconclusive* has not met the minimum criteria for detection but evidence of dreissenids has been documented. For example, evidence of a mussel veliger is detected via microscopy but cannot be confirmed by DNA analysis. This is a temporary classification and additional sampling of this water will be conducted to determine whether the water body is classified as negative (no detections in subsequent sample) or suspect (verified detection in subsequent sample).

A water body classified as *Suspect* indicates a water at which one sample has been verified by visual confirmation (visual identification of adult or microscopy identification of veliger) and this sample was confirmed as dreissenid by DNA analysis (PCR and gene sequencing). In this scenario, additional sampling will be conducted to determine whether another sample taken within 12 months detects evidence of dreissenids. If a subsequent sample does detect dreissenids, this water will then be classified as *Positive*.

A water body classified as *Positive* indicates a water at which two or more sampling events within a 12-month period meet the minimum criteria for detection. For example, samples from two different sampling events are verified by both visual identification (including microscopy) and DNA confirmation (PCR and gene sequencing).

In many cases, a water classified as *Positive* will ultimately become *Infested* which is a water body with an established (recruiting and reproducing) population of dreissenid mussels. For example, lakes Mead and Powell are considered infested waters as they have large

populations of reproducing dreissenids and mussels are readily evident on the shoreline and submerged materials such as docks, buoys, etc.

In some instances, the classification of a water body can be downgraded over time. The exact reasons why dreissenids are detected at a water once, then not again in subsequent sampling, or are detected in a water classified as *Positive* but never establish a population, remains largely unknown.

A water body initially classified as *Inconclusive* can be de-listed to *Negative* status after one year of negative testing results including at least one sample taken in the same month of subsequent year as the initial positive sample (to account for seasonal environment variability). The time frame for de-listing a water body extends from there with a water body initially classified as *Suspect* requiring three years of negative testing to re-classify to *Negative*, a *Positive* water body requiring five years of negative testing to re-classify to *Negative*, and an *Infested* water body requiring a successful eradication or extirpation event and a minimum of five years of negative testing results post-eradication event to re-classify to *Negative*.

WATER DESCRIPTION

Hawk Springs Reservoir is located on Horse Creek, 10 miles southeast of Hawk Springs and 10 miles north of La Grange, Wyoming (Figure 1). The reservoir is approximately two miles long and one mile wide and covers 1,280 surface acres with a total water capacity of 14,900 acre-feet. Water surface elevation at full pool is 4,475 feet, with 35,000 feet of shoreline. The reservoir has an average depth of 10 feet and maximum depth of 34 feet. The topography of the lower Horse Creek drainage is a combination of flat floodplains, rolling hills, and bluffs. The dam and the reservoir are within the meandering floodplain of Horse Creek.

The dam and reservoir were constructed in the early 1930s for irrigation purposes and are operated by the Horse Creek Conservation District. In 1983 the Wyoming Legislature approved funds to rehabilitate the dam and water delivery system in return for guaranteed public access and a conservation pool (4,462 feet water elevation) for fisheries purposes. Public access was further solidified in November 2009, when the district court granted summary judgment in favor of the State of Wyoming, ruling that, pursuant to an agreement between Horse Creek Conservation District and the State, the public has a perpetual right of recreational use access to Horse Creek Conservation District property adjacent to the Hawk Springs Reservoir (No. S-08-0200). While the reservoir and much of the surrounding lands are owned by the Horse Creek Conservation District, the site was named a state recreation area in 1987 and the Division of State Parks, Historic Sites, and Trails within the Wyoming State Parks and Cultural Resources Department administers the site. The recreation area offers 24 primitive campsites, picnic tables and fire rings, boat ramp, boat dock, restrooms and a playground, as well as seasonally operated potable water hydrants. Aside from the Horse Creek Conservation District and Division of State Parks, Historic Sites, and Trails, other key stakeholders include a number of private land owners with cabins along the north shoreline of the reservoir.

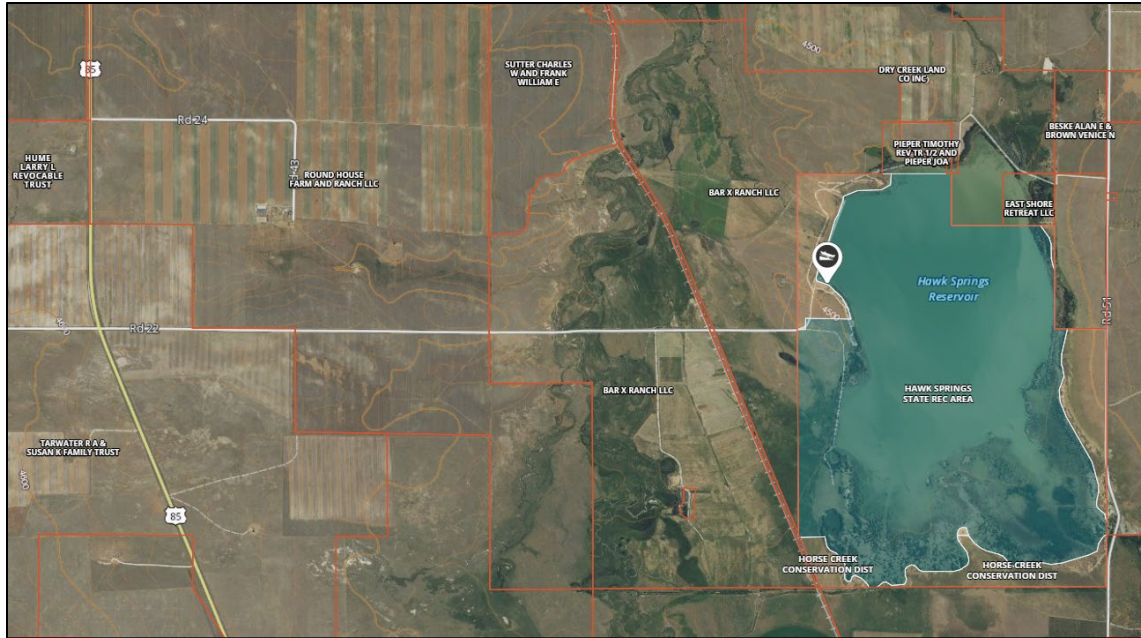


FIGURE 1. Overview map (onxmaps.com) of Hawk Springs Reservoir, with labeled land ownership status. State recreation area and location of boat ramp shown white and black pin.

Access and Boating Season

There is only one permanent public concrete boat ramp at Hawk Springs Reservoir (Figure 1). There are other private boat docks and slips on the northern shoreline where boats are launched. Shore launching is possible when the reservoir is low, but occurs near the boat ramp due to soft substrate. Shore launching by non-motorized watercraft is restricted to within the boundaries of the state recreation area. Vehicles can only access the recreation area from one road (Goshen County Road 22), which can be accessed from Wyoming Highway 85. Cabin owners along the north shoreline access their cabins via separate county roads on the eastern side of the reservoir.

Based on January 1, 2018-November 11, 2019 AIS inspections of boats bound for Hawk Springs Reservoir (n = 696) boaters were typically from Wyoming (74%), Colorado (16%), and Nebraska (8%). Boaters from other states also visit the reservoir, but in low numbers. Current AIS inspection data is similar to data from a programmed creel survey in 1997 (Meyer 1998), when the majority of resident anglers were from Laramie County, and out-of-state anglers were from either Colorado or Nebraska. Hawk Springs Reservoir is primarily a destination for boat anglers in the spring (May-June) and recreational boaters in summer (July-August). Around 90% of the boats inspected in 2018 and 2019 were motorized boats (i.e., outboards, inboard/outboards, and jet skis).

Based on Laramie Region AIS inspection data from 2016 through 2018, the number of boaters entering inspection stations increases mid-May, peaks the 1st week of July, and steadily decreases in September. This regional boating use pattern is also seen at Hawk Springs Reservoir, where the typical boating season starts when anglers begin to fish the reservoir in late

April to early May. Boat angler use peaks in June and then transitions into more recreational boating (i.e., jet skis and ski boats) July through August.

RAPID RESPONSE – SHORT-TERM SUSPECT STATUS

In the event that a sample from Hawk Springs Reservoir is confirmed positive for dreissenid mussels, the reservoir will be considered Short-term Suspect (defined above). After the initial detection, follow-up sampling will occur and results will take approximately six weeks to be reported. During that time, it will be necessary to minimize the risk of spreading mussels to other waters. Within one week, resources will need to be in place to perform required clean, drain, dry exit inspections of all boats leaving the reservoir and decontamination of undrainable areas, such as ballast tanks and motors. All watercraft leaving Hawk Springs Reservoir will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

At Short-term Suspect Status, there will not be time to hire personnel or purchase equipment. Therefore, the initial response will rely on existing personnel and equipment. Immediately after initial detection, job announcements and requisitions will be prepared so personnel can be hired and equipment can be purchased as quickly as possible once follow-up results are available.

Communication Plan

Upon the initial detection of dreissenid mussels, WGFD’s AIS Coordinator will begin the administrative communication chain outlined in the WGFD AIS Administrative Rapid Response Plan (WGFD 2020). Initial contacts in the administrative communication chain include the AIS Coordinator contacting the Communications Director, the Regional Fisheries Supervisor, and the Fish Division Chief, who contacts the WGFD Director. On the regional level, the Laramie Regional Fisheries Supervisor will begin the regional communication chain to disseminate information about the detection to internal and external partners and stakeholders (Figure 2). Internal WGFD contacts include Regional Fish Division personnel, the Regional Wildlife Supervisor, the Regional Habitat and Access Supervisor and the Regional I&E Specialist. The Regional Wildlife Supervisor will then contact the Torrington Game Warden as well as local Wildlife and Terrestrial Habitat biologists. The Regional Habitat and Access Supervisor will contact appropriate Habitat and Access biologists.

The Laramie Regional Fisheries Supervisor and biologists will contact the list of key stakeholders listed in Appendix A, particularly Horse Creek Conservation District, Division of State Parks, Historic Sites, and Trails, the City of Torrington, the towns of Hawk Springs, LaGrange, and Yoder, the Goshen Irrigation District, and Nebraska Game and Parks. Every effort should be made to quickly contact all partners and stakeholders prior to beginning public outreach efforts.

Boater contacts made through the Wyoming AIS inspection stations will be used as a primary notification and education outlet during this time period. The AIS Coordinator will also contact and coordinate with WGFD communication personnel, including Regional I&E (see Public Outreach, below), and regional stakeholders (Western Regional Panel, federal partners, etc.).

Key information to convey to internal and external partners and stakeholders should include the name of the affected water, which species was collected, who collected the sample, where the sample was collected, which agency/expert analyzed the sample, any relevant information about the sample, who to contact for more information, a brief description of containment protocols that will be put in place and any critical changes for the public. Every effort should be made to quickly contact all partners and stakeholders prior to beginning public outreach efforts. The regional fisheries supervisor will attempt to make all contacts within 24 hours of detection and will contact the Communications Director once enough contacts have been made to initiate outreach efforts.

Contact information for key individuals can be found in Appendix A.

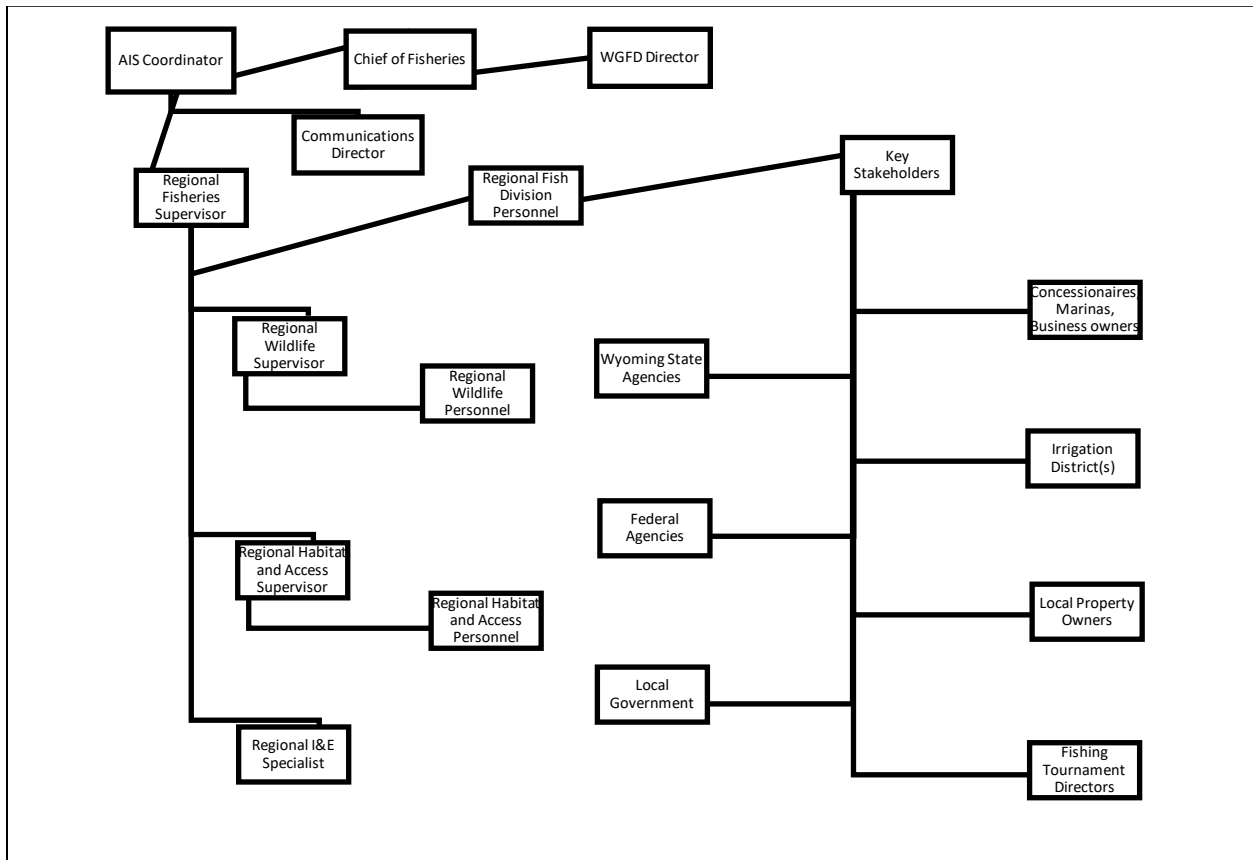


FIGURE 2. Communication chain for dissemination of information on the local and regional level following a dreissenid mussel detection in a Wyoming water.

Closures

There is currently a boating (i.e., all watercraft) closure on Hawk Springs Reservoir from December 1-February 15. This seasonal closure would be extended and in effect from November 1 through March 1. In addition, shore launching by motorized watercraft will be prohibited. All watercraft must receive an exit inspection and decontamination, if necessary, before leaving Hawk Springs Reservoir. All watercraft must receive an exit inspection and decontamination before leaving Hawk Springs Reservoir. All watercraft are required to be off

the water by the established AIS check station closing time in order to receive an exit inspection and decontamination. Boats can remain on the water overnight, but must be inspected and decontaminated before leaving the reservoir. Launching of motorized watercraft from private launch sites and shore launching of non-motorized watercraft would be permitted, but all would require an exit inspection prior to leaving the reservoir. Additional closures could be considered after discussions with Horse Creek Conservation District, Division of State Parks, Historic Sites, and Trails, and WGFD Laramie Regional Wildlife, Fisheries, and Habitat and Access supervisors.

Check Station(s)

Inspections will be based on current WGFD AIS inspection protocols. Boats exiting Hawk Springs Reservoir will be directed towards the exit inspection area at the eastern end of the parking area (Figure 3). Boats launching at the boat ramp will not encounter the AIS check station, so during non-busy periods, a temporary check station could be set-up at the boat ramp to conduct entry inspections. Letters will be mailed to cabin owners informing them of the exit inspection regulations during the Short-term Suspect Status level. Thereafter, it will be each individual boat owner's responsibility to follow the regulations. Hours of operation for the AIS check station will approximate sunrise and sunset across the boating season and will be from 6 AM-6 PM, March 1 to April 30; 6 AM-8 PM, May 1 to August 31; and 6 AM-6 PM September 1 to October 31. In cooperation with the Horse Creek Conservation District and Division of State Parks, Historic Sites, and Trails, a short connecting road will need to be constructed to facilitate traffic flow of boats exiting the check station area (Figure 3). No work to the check station area will be needed during the Short-term Suspect period and fresh water is available on-site, but only from May through September. Freshwater is also available from the WGFD Downar Bird Farm.



FIGURE 3. Overview map (onxmaps.com) of Hawk Springs Reservoir State Recreation Area parking lot and boat ramp. AIS check station location shown in white text and new road shown with black dashed lines.

Staffing Plan

Staffing needs will be highest from May 1 to August 31 when the AIS check station will be open 14 hours a day (6 am-8 pm), seven days a week. The AIS check station will be staffed with four inspectors Thursday-Saturday working three shifts (6 AM-2 PM, two inspectors; 10 AM-6 PM, one inspector; 12 PM-8 PM, one inspector) The check station will be staffed with three inspectors on Sunday-Wednesday, working three shifts (6 AM-2 PM; 10 AM-6 PM; 12 PM-8 PM). Based on a 40-hour work week, at least five inspectors will be needed to maintain this staffing level during the Short-term Suspect Status period.

Supplies and Equipment

The Laramie AIS Specialist and the Regional Fisheries biologists will transport two mobile decontamination units to the reservoir. In addition to an onsite outhouse facility, there is also freshwater available from May through September to fill the decontamination unit. If needed, freshwater is also available at the WGFD Downar Bird Farm, which is 16 miles from the

reservoir. A 550-gallon tank will be purchased to have water available on-site. A trailer will need to be borrowed to haul the water tank. In addition to mobilizing the temporary inspection station, the Laramie AIS Specialist will install appropriate signs at the boat ramp. Signage will include information about inspection requirements upon leaving Hawk Springs Reservoir. The Laramie AIS Specialist should rent a dynamic messaging sign until permanent signs are installed. During the Short-term Suspect period, Laramie Regional personnel working the AIS check station will stay at the WGFD Springer shop bunkhouse and will receive camp grocery per-diem. See Short-term Suspect Status budget in Appendix B for information on costs associated with this six week period.

Public Outreach

The AIS Administrative Rapid Response Plan outlines the general public outreach plan for suspect, positive or infested determinations for Wyoming waters (WGFD 2020). Following an initial sample testing positive for dreissenid mussels, the AIS Coordinator will contact the Communication Director at WGFD Cheyenne Headquarters. Prior to initiating the public outreach plan, key partners and stakeholders should be contacted according to the Communication Plan (above). The regional fisheries supervisor will attempt to make all contacts within 24 hours of detection and will contact the Communications Director once enough contacts have been made. The Communications Director will then initiate the Communications Plan. A statewide press release will be sent out and information will be posted on the AIS website and any necessary social media. The AIS Coordinator, Regional Fisheries Supervisor and Regional AIS Specialist will collaborate with the Laramie Regional I&E Specialist to relay information about Short-term Suspect Status at Hawk Springs Reservoir through media outlets (newspapers, radio, etc.). Regional Information and Education personnel will coordinate all communications efforts with the Communications Director.

RAPID RESPONSE – LONG-TERM SUSPECT STATUS

If initial follow-up sampling does not yield a positive result, Hawk Springs Reservoir would enter Long-term Suspect Status (defined above) and remain at this level for up to three years if no additional positive samples are found. The goal during this period is still to minimize the risk of spreading mussels to other waters. During the first year (from initial detection through the following boating season), we will need to provide capacity for all boaters coming off the water to efficiently obtain a required clean, drain, dry exit inspection, motor flush, and decontamination of ballast tanks and other undrainable areas. All watercraft leaving Hawk Springs Reservoir will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

If there is no confirmation of dreissenid mussel presence after the first full boating season, efforts will switch in years two and three to a lower level response, with a goal of contacting a significant number of boaters, but placing more responsibility on boaters to obtain an exit inspection. Inspectors will still conduct clean, drain, dry exit inspections on boats leaving the water and decontaminate ballast tanks and other undrainable areas. If feasible, they will continue to flush all motors. If not, they will drain outboard motors and only flush inboard/outboard and inboard motors as these motor types are difficult to drain completely.

Public outreach will increase via multiple outlets to highlight the potential threat at the suspect water.

Communication Plan

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Laramie Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the Laramie Region and key stakeholders (Appendix A) of follow-up sampling results.

Closures

The seasonal closure implemented during Short-term Suspect Status, would remain in effect during Long-term Suspect Status (years 1-3). In addition, shore launching by motorized watercraft would continue to be prohibited. Inspection and decontamination requirements implemented during Short-term Suspect Status would remain in effect through year 1 of Long-term Suspect Status period. For years 2 through 3, after boating on Hawk Springs Reservoir, all watercraft must receive an exit inspection and decontamination, if necessary, before launching on another water. Shore launching by motorized watercraft would be prohibited, but launching of motorized watercraft from private launch sites would be permitted, as would shore launching of non-motorized watercraft. Watercraft could remain on the water overnight, if permissible. Additional closures or restrictions could be considered after discussions with Horse Creek Conservation District, Division of State Parks, Historic Sites, and Trails, as well as WGFD Laramie Regional Wildlife, Fisheries, and Habitat and Access supervisors.

Check Station

Inspections will be based on current WGFD AIS inspection protocols. Boats exiting Hawk Springs Reservoir will be directed towards the exit inspection area at the eastern end of the parking area (Figure 3). Boats launching at the boat ramp will not encounter the AIS check station, so during non-busy periods, a temporary check station could be set-up at the boat ramp to conduct entry inspections. Once a check station is constructed on the access road to the boat ramp (Figure 4), all boats entering and exiting Hawk Springs Reservoir will encounter the inspection area and be required to stop. Letters will be mailed to cabin owners informing them of the exit inspection regulations during the Long-term Suspect Status level. During year 1, hours of operation for the AIS check station across the boating season will be from 6 AM-6 PM from March 1 to April 30, 6 AM-8 PM May 1 to August 31, 6 AM-6 PM September 1 to October 31. Data will be collected during year 1 on timing of boats entering and exiting Hawk Springs Recreation Area. This data will help establish effective AIS check station hours of operation for the future. In addition, if data indicates high use by local boaters, then a local boater program could be implemented during years 2 and 3 of Long-term Suspect Status or the Positive Status period.

In cooperation with the Horse Creek Conservation District and Division of State Parks, Historic Sites, and Trails, a more permanent AIS check station will be constructed, with a concrete pad and mobile office (Figure 4). This check station area will allow for the inspection of boats entering and exiting the recreation area, but the priority would be to conduct exit

inspections. Beginning year 2 of Long-term Suspect Status, the AIS check station will be moved to the new area. The dates of operation will be the same as year 1, but the hours of operation will be reduced to 8-10 hours for the entire boating season (i.e., March 1 to October 31). Electrical service and freshwater is available on-site, and freshwater is also available from the WGFD Downar Bird Farm. Approximately 550 ft of power lines, associated poles, and metering service would be needed to hook up the mobile office to electricity. In addition, given the number of staff, it would be appropriate to rent an outhouse from March through October.

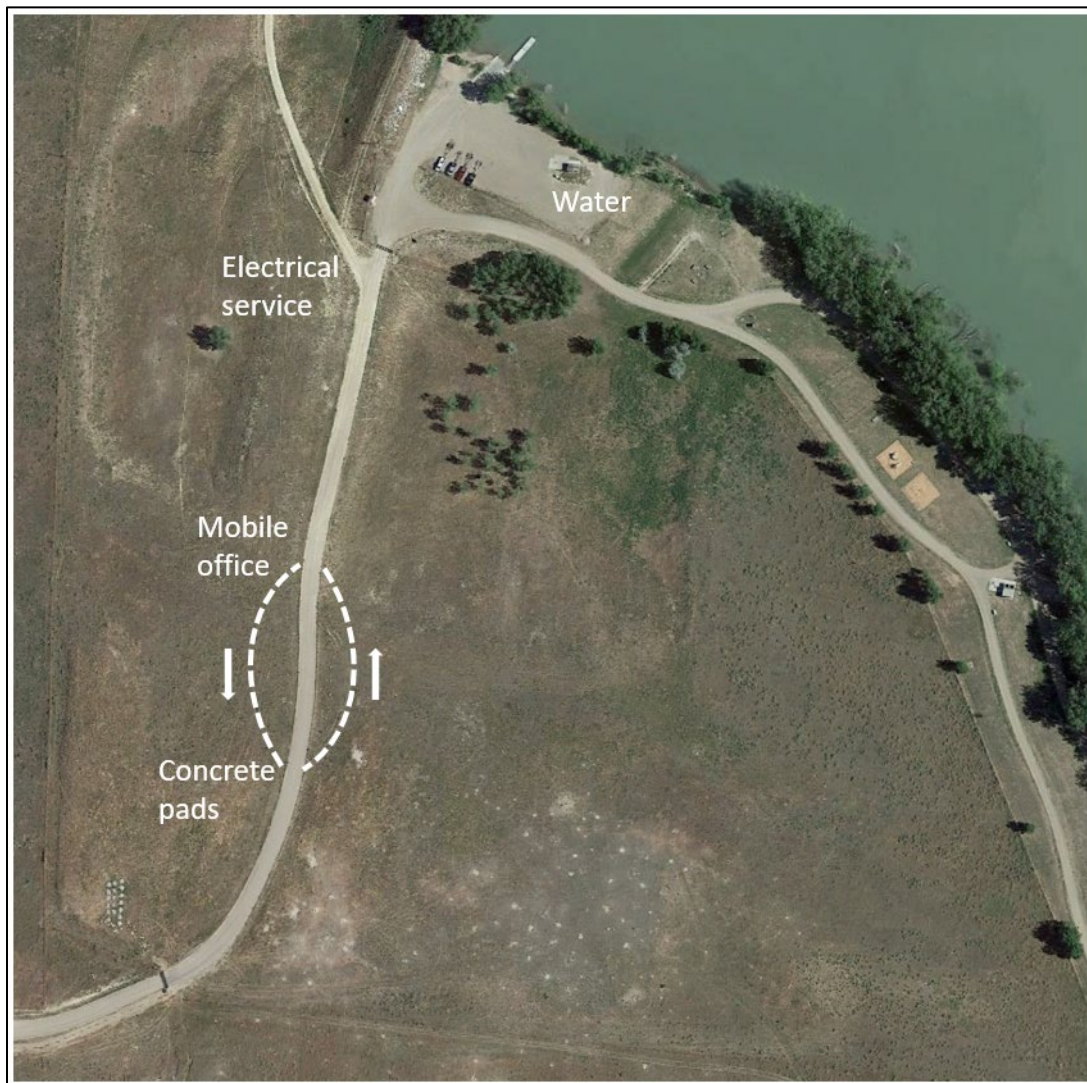


FIGURE 4. Overview map of Hawk Springs Reservoir State Recreation Area parking lot and boat ramp area. New AIS check station area with locations of mobile office, concrete decontamination pads, electrical service, and water source shown in white text and new roads shown with white dashed lines. White arrows depict traffic flow.

Staffing Plan

Staffing needs will remain the same as the Short-term Suspect Status period. During year 1 the AIS check station will be staffed with three inspectors working two shifts (6 AM-2 PM; 10 AM-6 PM) from March 1 to April 30 and from September 1 to October 31 when the check station will be open 12 hours a day (6 AM-6 PM). Staffing needs will be highest from May 1 to August 31 when the AIS check station will be open 14 hours a day (6 AM-8 PM), seven days a week. The AIS check station will be staffed with four inspectors Thursday-Saturday working three shifts (6 AM-2 PM, two inspectors; 10 AM-6 PM, one inspector; 12 PM-8 PM, one inspector). The check station will be staffed with three inspectors on Sunday-Wednesday, working three shifts (6 AM-2 PM; 10 AM-6 PM; 12 PM-8 PM). Based on a 40-hour work week, at least five inspectors will be needed to maintain this staffing level during year 1 of Long-term Suspect Status period. During years 2-3, the AIS check will be open 8-10 hours a day from March 1 through October 31, seven days a week. During years 2-3 staffing needs will be highest from May 1 to August 31 when the AIS check station will be open 10 hours a day (7 AM-5 PM), seven days a week. The AIS check station will be staffed with four inspectors Thursday-Saturday working three shifts (7 AM-3 PM, two inspectors; 7 AM-5 PM, one inspector; 9 AM-5 PM, one inspector). The check station will be staffed with three inspectors on Sunday-Wednesday, working two shifts (7 AM-3 PM; 9 PM-5 PM). Based on a 40-hour work week, five inspectors will be needed to maintain this staffing level during years 2-3 of the Long-term Suspect Status period.

Two 8-month term (March to October) and two 4-month term (May to August) technicians will be hired to perform inspections and decontaminations. In addition, a 9-month contract Biologist I (February to October) will be hired to supervise technicians and oversee check station operations under two different scenarios. Scenario 1 is if the first detection occurs during annual July or September AIS monitoring surveys. Under this scenario the Laramie AIS Specialist will staff and supervise the Hawk Springs Reservoir AIS check station for the remainder of the boating season (through October 31) and then be replaced by the Biologist I the following spring (March 1). Scenario 2 is if the first detection is in the early spring/summer period (before July 1). Under this scenario, the Laramie AIS Specialist will staff and supervise the Hawk Springs Reservoir AIS check station until a Biologist I is hired. In both scenarios, Laramie Fish Management personnel will assume the day-to-day Laramie AIS Specialist duties while the Specialist assumes Rapid Response and containment duties at Hawk Springs Reservoir. The Biologist I and technicians will be hired with Hawk Springs Reservoir as their duty station, and will need to find nearby housing and their own transportation to and from the AIS check station.

Supplies and Equipment

The Laramie Regional Supervisor and Laramie AIS Specialist will work with the Laramie Habitat and Access Supervisor, Yoder Habitat and Access Biologist, and the Horse Creek Conservation District and Division of State Parks, Historic Sites, and Trails to move the AIS check station from the boat parking area to just outside of the recreation area on the main entrance road (Figure 4). Ideally, this process will be started during year 1 of Long-term Suspect Status. Two new pullout roads will be built to conduct inspections for boats entering and exiting Hawk Springs Reservoir (Figure 4). Road base and gravel will be needed to cover the pullout roads and for the mobile office, and two concrete pads (25 x 25 feet) will be poured where

decontaminations will be conducted (Figure 4). In year 1, generators will be purchased to power the mobile office. Thereafter, the installation of electrical power at the check station would be necessary to meet the long-term commitment of containment, during years 2-3. Approximately five power poles would be needed to transmit power to the AIS check station. Electrical costs included in the budget (Appendix B) are estimated based on prices for a similar project at Meeboer Lake.

Two decontamination units will be purchased and a sedan will be leased from State Motor Pool to perform AIS check station functions. A $\frac{3}{4}$ ton truck and a 10,000 lb capacity utility trailer with an additional 550 gallon tank will be purchased to haul water from the WGFD Downar Bird Farm, as needed, for Long-term Suspect Status. A 2 inch diameter trash pump will be purchased to transfer water from the tanks to decontamination units. This water will be used as a backup for the water at the recreation area that is only available from May through September. The Laramie AIS Specialist will replace any temporary signs with newly purchased permanent signs (e.g., Exit Inspection Required, Motorized Shore Launching Prohibited, Non-motorized Watercraft Need Exit Inspection, etc.).

Public Outreach

At Long-term Suspect Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Laramie Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with Long-term Suspect Status on Hawk Springs Reservoir.

RAPID RESPONSE – POSITIVE STATUS

Hawk Springs Reservoir will be considered positive for dreissenid mussels if two or more sampling events within a 12-month period meet the minimum criteria for detection (defined above). Hawk Springs Reservoir will remain at Positive Status for five consecutive years of negative sample results, at which time it will be downgraded to Negative Status. Alternatively, if an established population of mussels is detected during that five years, it will be upgraded to Infested Status.

The goal during Positive Status is still to minimize the risk of spreading mussels to other waters. We will need to provide capacity for all boaters coming off the water to efficiently obtain a required clean, drain, dry inspection, motor flush, and decontamination of ballast tanks and other undrainable areas. If live mussels are found on any boats during exit inspections, they will be fully decontaminated and consideration will be given to upgrading Hawk Springs Reservoir to Infested Status. All watercraft leaving Hawk Springs Reservoir will receive a seal and seal receipt to verify the watercraft received an exit inspection. Seals will be red in color to designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

Communication Plan

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response

Plan; WGFD 2020). In addition, the Laramie Region internal communication chain outlined in the Short-term Suspect Status section (above) will be used to inform the Laramie Region and key stakeholders of changes in status level.

Closures

Please refer to the “Closures” section in Short-term Suspect Status, as all closures and public and private launching restrictions would remain the same during Positive Status. Additional closures and restrictions could be considered after discussions with Horse Creek Conservation District, Division of State Parks, Historic Sites, and Trails, and WGFD Laramie Regional Wildlife, Fisheries, and Habitat and Access supervisors.

Check Station

Inspections will be based on current WGFD AIS inspection protocols. Boats exiting Hawk Springs Reservoir will be directed towards the check station on the access road to the boat ramp (Figure 4), all boats entering and exiting Hawk Springs Reservoir will encounter the inspection area and be required to stop. Letters will be mailed to cabin owners informing them of the exit inspection regulations during the Positive Status period. Hours of operation for the AIS check station will approximate sunrise and sunset across the boating season, and will be from 6 AM-6 PM from March 1 to April 30, 6 AM-8 PM May 1 to August 31, and 6 AM-6 PM September 1 to October 31. In cooperation with the Horse Creek Conservation District and Division of State Parks, Historic Sites, and Trails, a permanent AIS check station will be constructed, with a concrete pad and mobile office (Figure 4). Please refer to the “Check Station” section in Long-term Suspect Status for more details on check station construction and location details. A local boater program will be implemented immediately upon entering Positive Status to reduce the need for inspections and decontaminations of boats that only launch at Hawk Springs Reservoir. Please refer to the Administrative Rapid Response Plan (WGFD 2020) for details on the local boater program.

Staffing Plan

Staffing needs will be the same as the Long-term Suspect Status year 1 staffing plan. Two 8-month term (March to October) and two 4-month term (May to August) technicians will be hired to perform inspections and decontaminations. In addition, a 9-month (February to October) contract Biologist I will be hired to supervise technicians and oversee check station operations. The Biologist I and technicians hired for the Hawk Springs Reservoir AIS check station will be hired with Hawk Springs Reservoir as their duty station, and will need to find nearby housing and their own transportation to and from the AIS check station.

Supplies and Equipment

The Laramie Regional Supervisor and Laramie Region AIS Specialists will work with the Laramie Habitat and Access Supervisor, Yoder Habitat and Access Biologist, and the Horse Creek Conservation District and Division of State Parks, Historic Sites, and Trails to construct an AIS check station just outside of the recreation area on the main entrance road (Figure 4). Two new pullout roads will be built to conduct inspections for boats entering and exiting Hawk

Springs Reservoir. Road base and gravel will be needed for the pullout roads and mobile office, and two concrete pads (25 x 25 feet) will be poured where decontaminations will be conducted (Figure 4). The installation of electrical power at the check station would be necessary to meet the long-term commitment of containment. Approximately five power poles would be needed to transmit power to the AIS check station. Electrical costs included in the budget (Appendix B) are estimated based on prices for a similar project at Meeboer Lake.

Two decontamination units and a $\frac{3}{4}$ ton pickup will be purchased and a sedan will be leased from State Motor Pool to perform AIS check station functions. In addition, a utility trailer with two 550 gallon tanks will be purchased to haul water from the WGFD Downar Bird Farm. A 2 inch diameter trash pump will be purchased to transfer water from the tanks to decontamination units. This water will be used as a backup for the water at the recreation area that is only available from May through September. The Laramie AIS Specialist will replace any temporary signs with newly purchased permanent signs (e.g., Exit Inspection Required, Motorized Shore Launching Prohibited, Non-motorized Watercraft Need Exit Inspection, etc.).

Public Outreach

At Positive Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Laramie Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Positive Status on Hawk Springs Reservoir.

RAPID RESPONSE – INFESTED STATUS

Hawk Springs Reservoir will be considered Infested if an established (recruiting or reproducing) population of dreissenid mussels is identified. Hawk Springs Reservoir will remain at Infested Status until methods for complete eradication are discovered and implemented. Based on the best available technology and science at the time of this publication, it is expected that Hawk Springs Reservoir would remain in Infested Status in perpetuity.

The goal during Infested Status is still to minimize the risk of spreading mussels to other waters. We will need to provide the capacity to contact all boaters coming off the water, conduct exit inspections, and ensure all boats leaving have undergone a full decontamination. All watercraft leaving Hawk Springs Reservoir will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

Communication Plan

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Laramie Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the Laramie Region and key stakeholders of changes in status level.

Closures

If the status level of Hawk Springs Reservoir is raised quickly to Infested, therefore bypassing other status levels, it is recommended boating be prohibited until resources can be put in place for full containment. The closure could be for two weeks or more during the peak boating season, while containment measures are implemented. If an established population of adult dreissenid mussels are found in August or later the recommendation is to prohibit boating until the next boating season (April 1) when full containment operations can begin. Please refer to the “Closures” section in Short-term Suspect Status, as all closures and public and private launching restrictions would remain the same during Infested Status.

Check Station

Please refer to the “Check Station” section in Long-term Suspect Status for more details on check station construction and location details. The closure implemented at Infested Status to allow resources to be mobilized will not be lifted until the permanent check station area is constructed (Figure 4). Check station dates and hours of operation will be similar to Long-term Suspect year 1 and Positive statuses. Letters will be mailed to cabin owners informing them of the exit inspection and decontamination regulations during Infested Status. A local boater program will be implemented once the boating closure is lifted to reduce the need for inspections and decontaminations of boats that only launch at Hawk Springs Reservoir. Please refer to the Administrative Rapid Response Plan (WGFD 2020) for details on the local boater program.

Staffing Plan

Two 8-month term (March to October) and four 4-month term (May to August) technicians will be hired to perform inspections and decontaminations. In addition, a 9-month (February to October) contract Biologist I will be hired to supervise technicians and oversee check station operations. The Biologist I and technicians hired for the Hawk Springs Reservoir AIS check station will be hired with Hawk Springs Reservoir as their duty station, and will need to find nearby housing and their own transportation to and from the AIS check station. Staffing needs will be highest from May 1 to August 15 when the AIS check station will be open 14 hours a day (6 AM-8 PM), seven days a week. The AIS check station will be staffed with five inspectors Thursday-Saturday working three shifts (6 AM-2 PM, two inspectors; 10 AM-6 PM, two inspectors; 12 PM-8 PM, one inspector) The check station will be staffed with four inspectors on Monday-Wednesday, working three shifts (6 AM-2 PM, two inspectors; 10 AM-6 PM, one inspector; 12 PM-8 PM, one inspector).

Supplies and Equipment

Please refer to the “Supplies and Equipment” section in Positive Status, as the permanent AIS check station will need to be constructed during Infested Status, with amenities such as power, office trailer, water tanks, water pumps, concrete pads, pullouts, and signs. At Infested Status, an additional decontamination unit will be purchased as a back-up.

Public Outreach

At Infested Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Laramie Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with an Infested Status on Hawk Springs Reservoir.

REFERENCES

- WGFD. 2019. Wyoming Game and Fish Department Aquatic Invasive Species Sampling and Monitoring Manual. Wyoming Game and Fish Department, Cheyenne, WY.
- WGFD. 2020. Wyoming Game and Fish Department Administrative Dreissenid Mussel Rapid Response Plan. Wyoming Game and Fish Department, Cheyenne, WY.

APPENDIX A: KEY CONTACTS

		Phone	Email
<u>Wyoming Game & Fish Department</u>			
	Laramie Region Fisheries Supervisor		
	Laramie Region Wildlife Supervisor		
	Laramie Region AIS Specialist		
	Laramie Region AIS Specialist		
	Laramie Region Fisheries Biologist		
	Laramie Region Fisheries Biologist		
	AIS Coordinator		
	Wheatland Region Game Warden Coordinator		
	Torrington Game Warden		
	Laramie Region I&E Specialist		
<u>Horse Creek Conservation District</u>			
	Office number		
<u>Hawk Springs State Recreation Area</u>			
	Park Superintendent Guernsey State Park		
<u>City of Torrington</u>			
	Mayor		
<u>Town of Hawk Springs and Yoder</u>			
<u>Town of LaGrange</u>			
	Mayor		
<u>Goshen County Commissioners</u>			
	Chairman		
<u>Goshen Irrigation District</u>			
	Manager		
<u>Nebraska Game and Parks</u>			
	Invasive Species Program Coord.		

APPENDIX B: ANNUAL BUDGETS ASSOCIATED WITH EACH STATUS LEVEL**SHORT-TERM SUSPECT STATUS**

Travel	Description	# of Days	Cost/Day	Total Cost
	Camp Groceries (person days)	180	\$24	\$4,320
	Subtotal			\$4,320
Supplies	Description	# of units	Cost/unit	Total Cost
	550 gallon plastic ag. Tank	1	\$500	\$500
	DMS sign rental (1 unit, 2 months)	2	\$1,080	\$2,160
	DMS sign shipping	1	\$1,200	\$1,200
	Check station signs	4	\$600	\$2,400
	Subtotal			\$6,260
	Total			\$10,580

LONG-TERM SUSPECT STATUS YEAR 1

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months (Feb to Oct)	9	\$4,543	\$40,887
	Technician 1, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 2, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 3, 4 months (May to Aug)	4	\$2,863	\$11,452
	Technician 4, 4 months (May to Aug)	4	\$2,863	\$11,452
	Subtotal			\$109,599
Vehicle	Description	# of Months	Cost/Month	Total Cost
	3/4 ton truck	1	\$33,000	\$33,000
	State Motor Pool Sedan 1	8	\$500	\$4,000
	Subtotal			\$37,000
Supplies	Description	# of Units	Cost/Unit	Total Cost
	Gravel for pullouts	2	\$10,000	\$20,000
	Concrete decontamination pads	2	\$10,000	\$20,000
	Drainage materials for waste water	1	\$5,000	\$5,000
	Office Trailer	1	\$20,000	\$20,000
	16 ft. utility trailer	1	\$4,000	\$4,000
	550 gallon plastic ag. tank	1	\$500	\$500
	2-inch trash pump	1	\$300	\$300
	Generator 2-pack with parallel	1	\$1,900	\$1,900
	Decon Unit with attachments	2	\$12,500	\$25,000
	Gasoline for generators	1	\$1,000	\$1,000
	Misc supplies 231 - 239 series	1	\$5,000	\$5,000
	Portable toilet rental (8 months)	8	\$250	\$2,000
	Check Station signs	6	\$650	\$3,900
	Subtotal			\$108,600
	Total			\$255,199

LONG TERM SUSPECT STATUS YEARS 2-3

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months (Feb to Oct)	9	\$4,543	\$40,887
	Technician 1, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 2, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 3, 4 months (May to Aug)	4	\$2,863	\$11,452
	Technician 4, 4 months (May to Aug)	4	\$2,863	\$11,452
	Subtotal			\$109,599
Vehicle	Description	# of Months	Cost/Month	Total Cost
	State Motor Pool Sedan 1	8	\$500	\$4,000
	Subtotal			\$4,000
Supplies	Description	# of units	Cost/unit	Total Cost
	Electrical service installation	1	\$7,500	\$7,500
	monthly electrical service	8	\$200	\$1,600
	Portable toilet rental (8 months)	8	\$250	\$2,000
	misc supplies 231-239	1	\$5,000	\$5,000
	Subtotal			\$16,100
	TOTAL			\$129,699

POSITIVE STATUS

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months (Feb to Oct)	9	\$4,543	\$40,887
	Technician 1, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 2, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 3, 4 months (May to Aug)	4	\$2,863	\$11,452
	Technician 4, 4 months (May to Aug)	4	\$2,863	\$11,452
	Subtotal			\$109,599
Vehicle	Description	# of Months	Cost/Month	Total Cost
	3/4 ton truck ^a	1	\$33,000	\$33,000
	State Motor Pool Sedan 1	8	\$500	\$4,000
	Subtotal			\$37,000
Supplies	Description	# of Units	Cost/Unit	Total Cost
	Gravel for pullouts ^a	2	\$10,000	\$20,000
	Concrete decontamination pads ^a	2	\$10,000	\$20,000
	Drainage materials for waste water ^a	1	\$5,000	\$5,000
	Office Trailer ^a	1	\$20,000	\$20,000
	16 ft. utility trailer ^a	1	\$4,000	\$4,000
	550 gallon plastic ag. tank ^a	2	\$500	\$1,000
	2-inch trash pump ^a	1	\$300	\$300
	Decon Unit with attachments ^a	2	\$12,500	\$25,000
	Gasoline for trash pump	1	\$1,000	\$1,000
	Misc supplies 231 - 239 series	1	\$5,000	\$5,000
	Check Station signs ^a	6	\$650	\$3,900
	Subtotal			\$105,200
Utilities	Description	# of Units	Cost/Unit	Total Cost
	Portable toilet rental (8 months)	8	\$250	\$2,000
	Electrical service installation ^a	1	\$7,500	\$7,500
	monthly electrical service	8	\$200	\$1,600
	Subtotal			\$11,100
	Total			\$251,828

^a These items will not need to be purchased if transitioning from Long-term Suspect Status.

INFESTED STATUS

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months (Feb to Oct)	9	\$4,543	\$40,887
	Technician 1, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 2, 8 months (March to Oct)	8	\$2,863	\$22,904
	Technician 3, 4 months (May to Aug)	4	\$2,863	\$11,452
	Technician 4, 4 months (May to Aug)	4	\$2,863	\$11,452
	Technician 5, 4 months (May to Aug)	4	\$2,863	\$11,452
	Subtotal			\$121,051
Vehicle	Description	# of Months	Cost/Month	Total Cost
	3/4 ton truck ^a	1	\$33,000	\$33,000
	State Motor Pool Sedan 1	8	\$500	\$4,000
	State Motor Pool Sedan 2	8	\$500	\$4,000
	Subtotal			\$41,000
Supplies	Description	# of Units	Cost/Unit	Total Cost
	Gravel for pullouts ^a	2	\$10,000	\$20,000
	Concrete decontamination pads ^a	2	\$10,000	\$20,000
	Drainage materials for waste water ^a	1	\$5,000	\$5,000
	Office Trailer ^a	1	\$20,000	\$20,000
	16 ft. utility trailer ^a	1	\$4,000	\$4,000
	550 gallon plastic ag. tank ^a	2	\$500	\$1,000
	2-inch trash pump ^a	1	\$300	\$300
	Decon Unit with attachments ^b	3	\$12,500	\$37,500
	Gasoline for trash pump	1	\$1,000	\$1,000
	Misc supplies 231 - 239 series	1	\$5,000	\$5,000
	Check Station signs ^a	6	\$650	\$3,900
	Subtotal			\$117,700
Utilities	Description	# of Units	Cost/Unit	Total Cost
	Portable toilet rental (8 months)	8	\$250	\$2,000
	Electrical service installation ^a	1	\$7,500	\$7,500
	monthly electrical service	8	\$200	\$1,600
	Subtotal			\$11,100
	Total			\$290,851

^a Will not need to be purchased if transitioning from Long-term Suspect or Positive status.

^b Only one unit will need to be purchased if transitioning from Long-term Suspect or Positive status.